Congressional Notification Profile
DE-PS26-02NT41369

UNIVERSITY COAL RESEARCH PROGRAM, INNOVATIVE CONCEPTS PROGRAM
University of Utah

Background and Technical Information:

This project proposes to mechanically process mineral silicates (olivine, serpentine, zircon, beryl) in the presence of carbon dioxide to determine how well the silicates capture carbonates. By characterizing carbonation reactions in laboratory tests, the university will investigate the project's potential for sequestering CO_2.

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Congressional District: 02 District County: Salt Lake

Financial Information:

Length of Contract (months): 12
Government Share: $49,992
Total value of contract: $49,992

DOE Funding Breakdown:
Funds: FY 2002 $49,992

ABSTRACT

The proposed research will investigate the potential for carbonation of silicate minerals by mechanochemical processing. Small-scale tests will be conducted in the laboratory at the University of Utah, followed by semi-continuous, pilot-scale tests at the Institute for Advanced Materials.

Processing at the University of Idaho. The small-scale tests will determine the nature and extent of the reactions of carbon dioxide with pure silicate compounds (magnesium silicate, calcium silicate, magnesium-aluminum silicate, and zirconium silicate) and silicate minerals (olivine, serpentine, zircon, beryl, and bertrandite.) The pilot-scale tests will determine the feasibility of mechanochemical mineral carbonation on a larger scale, and determine whether temperature is a good indication of reaction progress. They will also give some indication of the costs that may be involved.

The tests will focus on two types of silicate compounds. The first type represents widely-occurring materials that would likely be used for large-scale sequestration of carbon dioxide by carbonation and will include magnesium silicate, calcium silicate, magnesium-aluminum silicate, olivine, and serpentine. The second group, including zirconium silicate, zircon, and bertrandite, represents silicate minerals that are commercially processed to extract contained metals, zirconium and beryllium. For these materials, carbonation may offer an extraction process that uses less energy and is less expensive.